Juvenile Monitoring Satellite Project Work Team
Meeting notes (Final)
March 29, 2004
Yolo Bypass Wildlife Area

Participants: Phillip Gaines (chair, FWS), Michelle Workman (EBMUD), Alice Low (CDFG), Tim Heyne (CDFG), Jim Earley (FWS), Donna Maniscalco (Jones & Stokes), Richard Corwin (USBR), Erin Chappel (DWR), Tracy McReynolds (CDFG), Diane Coulon (CDFG), Rich Dixon (CDFG), Duane Massa (CDFG), Mike Healy (CDFG), Ian Drury (CDFG), Colleen Harvey-Arrison (CDFG), Pat Brandes (FWS), Jason Kindopp (DWR), Lia McLaughlin (FWS), Larry Hansen (FWS)

Next Meeting: May 27, 10:00 AM

I. **Modify/adopt agenda:** The agenda was adopted with no changes.

II. **General:** Phillip Gaines welcomed and thanked the participants for attending the inaugural meeting of the JMPWT. Introductions were made and a short explanation of the purpose of the team was given. It was explained that the goals and objectives of the team have not been defined as yet, but would be defined over the course of the first few meetings. Phillip suggested the following objectives as a starting point for the team and asked participants to provide suggestions for other objectives at the next meeting.

1) Increase the quality and utility of juvenile monitoring data
2) Identify juvenile monitoring needs, research questions and data gaps
3) Provide, with a collective voice, expert recommendation and/or critical review of issues affecting juvenile salmonids
4) Bring together biologists to share information and expertise that will benefit juvenile monitoring activities.

III. **Featured Presentations**: presentations were given by Pat Brandes, Tracy McReynolds, Lia McLaughlin, Jason Kindopp, Colleen Harvey-Arrsion, Duane Massa, Jim Earley, Michelle Workman and Tim Heyne.

Tracy McReynolds - Butte and Big Chico Creek: The Butte and Big Chico Creek Chinook Salmon Life-History Investigation began in 1995. Juvenile salmon have been captured, utilizing rotary screwtraps, at various sites within Butte and Big Chico Creek. On Butte Creek, the Parrott-Phelan/Okie Dam is the upstream trapping location. This site is directly downstream of the spring-run salmon spawning habitat. The downstream trapping sites have all been located within the Sutter Bypass. Spring-run salmon trapped at the Okie Dam are emigrating juveniles, the majority of which are YOY. A very small proportion of yearling spring-run are also captured. During the period January through mid-March all spring-run fry are held for coded-wire tagging (CWT) and released back into the system near the point of capture. Since 1996, the project has tagged and released

over 740,000 salmon. The Sutter Bypass reach of Butte Creek is a flood relief area for both Butte Creek and the Sacramento River. The Sacramento River spills into the Bypass when flows exceed approximately 22,000 cfs. When this occurs our traps collect a mixture of Butte Creek and Upper Sacramento River salmon. Included in the Sutter Bypass captures have been CWT releases from Butte Creek, Coleman National Fish Hatchery, and Livingston Stone National Fish Hatchery. This project continues to 1) document time of alevin emergence, 2) document size at emigration, 3) develop a measure of relative abundance, and 4) identify instream rearing and emigration patterns.

Michelle Workman - Mokelumne River: The Mokelumne River juvenile salmonid monitoring program includes a natural production monitoring component and a hatchery production component. Natural production is estimated using rotary screw traps from December through July. Traps are calibrated and an estimate of outmigration is produced. Naturally produced juvenile fall Chinook salmon are coded wire tagged. During critically dry water years juveniles are trapped and trucked to the Delta based on water temperature criteria. Migration and residence is monitored Jan. through Dec. by seining and electrofishing from Camanche Dam to the Delta. Approximately 500,000 hatchery production juveniles are coded wire tagged each year. Hatchery production is approximately 5-9 million per year. Hatchery release groups include yearling, smolt, bay, river, and volitional releases.

Duane Massa - Yuba River: Englebright Dam marks the farthest point that anadromous fishes can ascend. There are 23 miles from Englebright to the mouth. Most spawning occurs below the Narrows. Daguerre Dam provides passage problems by virtue of its ineffective ladders and unscreened diversion upstream (South Yuba Brophy Canal). A RST is operated near Hallwood Blvd, about 6 miles upstream the Yuba mouth. A CWT operation is incorporated to the project. 180,000 juvenile salmon have been tagged to date. The life history evaluation project is funded through June 2006.

Lia McLaughlin - Lower Sacramento and San Joaquin Rivers and Delta: The Delta Juvenile Fish Monitoring Program, USFWS Stockton FRO, monitors relative abundance and distribution of Chinook salmon and other juvenile fishes year round. Currently, we conduct beach seining at over 55 sites throughout the Sacramento and San Joaquin Rivers, Delta, and San Francisco and San Pablo Bays. We trawl at three locations: Sherwood Harbor (Sacramento River mile {RM} 55), Mossdale (San Joaquin River RM 54), and Chipps Island (Suisun Bay mile 18). Typically, seine sites are sampled once per week and trawls are conducted three times per week. Between October 1 and January 31, additional seining is conducted on the Sacramento River to detect the presence of winter and spring Chinook salmon as they emigrate and become more vulnerable to water pumping operations. Our major products include real time reports to the Data Assessment Team, raw data exported to the IEP website almost real time, and various presentations at meetings and conferences. We plan on-going reviews of the monitoring program, and we are

making a concerted effort to increase analysis and availability of our data through publications in peer-reviewed journals.

Colleen Harvey-Arrison - Deer and Mill Creeks: Rotary Screw Trapping (RST) has been used since 1994 on each Mill and Deer Creeks to sample both spring- (SR) and fall-run (FR) Chinook outmigration. Initially, the purpose of the trapping was for SR life history studies and is currently being used for IEP's spring run protection process, where outmigrant data provides early warnings of emigration into the Sacramento San Joaquin Delta. Traps are fished daily from October thru May. Exceptions include when water temperatures exceed 60°F, when flows exceed 1000cfs or when traps are removed for repairs. Outmigrant data from each creek has proven useful in determining timing of emigration and length frequencies of emigrants. Due to the limitations of sampling in high flows during peak outmigration times, the data is insufficient in calculating juvenile survival or production indices. Since the RST's are located within fall run habitat in each creek, fry are not classified to run. Although in years when few fall run ascend to the trap sites, fry are treated as SR surrogates in data analysis. Within the SR holding and spawning habitat, spring run remain spatially isolated from FR Chinook. Due to the high elevation range (1200' up to 5200') and water temperature variations in SR spawning habitat, juveniles can emerge from November thru the following May. In fact, each year class may emigrate over a 17 month period. Although SR salmon emigrate as both yearlings and fry, ratios are unknown and may vary annually between creeks. The current Central Valley length @ date growth charts are identifying yearling SR as late-fall- and winter-run Chinook, and SR fry as fall-run Chinook. Growth charts specific to high elevation, tributary SR Chinook have not been developed and in fact given the variation in emergence times and life history strategies would be speculative at best. CWT studies have been attempted on Mill and Deer Creeks, but sample sizes remain too small to obtain significant tag recoveries.

Jason Kindopp - Feather River Monitoring: DWR's Feather River program has developed several monitoring and research programs targeting habitat use, growth and emigration of Feather River salmonids. These include Rotary Screw Trap Sampling (and associated trap efficiency evaluations/population estimates and wild tagging program), snorkel surveys (at broad, intermediate and fine scales), juvenile steelhead growth studies (mark/recapture and enclosure studies) and beach seining. Efforts to date have been valuable in determining emigration behavior of fall Chinook and habitat preferences and growth rates of juvenile steelhead. Although current activities will continue at similar levels, future efforts will focus heavily on steelhead growth, habitat use and emigration patterns.

Pat Brandes - Lower Sacramento and San Joaquin Rivers and Delta: Recoveries, in the lower Sacramento and San Joaquin Rivers and Delta of juvenile salmon that have been coded wire tagged are now available on a web-based mapping system generated through a contract funded by the USFWS in Stockton. The pilot effort includes recoveries from releases made in 1998-2003. The maps

can be accessed via the Stockton office's web page at www.delta.dfg.ca.gov/usfws/maps. The Stockton office is looking for input on this system, specifically identification of any errors that are found, comments or suggestions on improving the system and juvenile coded wire tag recovery data from other offices. The Stockton office believes that ultimately a system that maps the recoveries of particular groups of coded wire tag fish throughout the Central Valley will help our management of juvenile salmon in the Central Valley. This product is the first step in further analyzing this coded wire tag data.

James Earley - Battle Creek and Clear Creek monitoring: These ongoing monitoring projects have three primary objectives: 1) to determine an annual juvenile passage index (JPI) for Chinook salmon (*Oncorhynchus tshawytscha*) and rainbow trout/steelhead (*O. mykiss*), for inter-year comparisons; 2) obtain juvenile salmonid life history information including size, condition, emergence and emigration timing, and potential factors limiting survival at various life stages; and 3) collect tissue samples from juvenile salmonids for genetic and otolith analyses. Currently, investigations also include developing a tributary specific criterion for determining individual races of Chinook salmon present in these streams. The recognized criteria, (Greene 1992) currently in place for the upper Sacramento River and its tributaries was created using fall Chinook salmon raised in the main stem Sacramento River. It does not accurately assign race to tributaries that have incomplete spatial or temporal separation and overlapping spawn timing of both fall and spring Chinook. Criterion are being developed for expected fry emergence dates, based on redd surveys and temperature unit analysis.

Tim Heyne - Juvenile Sampling by CDFG in the San Joaquin River Basin: Adult spawning populations of fall-run Chinook salmon fluctuate drastically, with much of the fluctuation, mediated by varying water flows particularly during the springtime. Although the exact cause of mortalities is not known, CDFG decided in the 1980's to evaluate the affects of flows on smolt survival in the spring. This has involved large numbers of CWT marked Chinook being released from the Merced River Hatchery. These test have involved a paired release strategy that tests various sections of the river system with an upper and a lower release site. Recovery of the CWTs is primarily at Mossdale, the ocean fishery and spawning escapement surveys. The results of these tests show that survival generally increases with increasing spring outflow. Concerns about the use of hatchery fish and other sources of mortality have lead to additional forms of sampling. Rotary screwtraps along with trawl catch have been used in an attempt to estimate total number of juvenile Chinook leaving the river system. While the process of estimating total production for the rivers has seen problems, the RSTs have shed new light on juvenile migration patterns, factors affecting migration and growth rates. Restoration activities have lead to attempts to test survival through short sections of the rivers using dye marked fish. These evaluations are still in the beginning stages and will be evaluated thoroughly over the next few years. On the Merced River there is also an evaluation just begun which will use fyke nets to assess the extent of

loss of juveniles to river diversions and how the improvement of the screens on those diversions reduces the loss of Chinook.

IV. Housekeeping:

1) Frequency of meetings - The team discussed the frequency of future meetings. In general, meetings will be held bimonthly to maintain the team's initial enthusiasm and momentum for accomplishing team objectives. The frequency of meetings will be evaluated in the future depending on team needs.

2) Location of future meetings - Because team members are located throughout the Central Valley it was suggested that meetings be held in a centralized location, primarily in the Sacramento area. The team expressed support for meeting in the Sacramento area, but would entertain ideas to meet outside the area on a case-by-case basis.

3) Field trips - Most team members were interested in participating in field trips to observe specific juvenile monitoring projects. However, it was not determined how this would be accomplished. More discussion on the topic of field trips will occur at future meetings.

4) Meeting notes - The team discussed how to handle the meeting notes and final disposition. Alice Low suggested that meeting notes be finalized and submitted to the parent team. Phillip Gaines agreed to take notes at each meeting, to enlarge those notes after the meeting and distribute the notes to team members for review. Upon review and approval, the notes will be finalized and submitted to the parent team.

V. Tentative Agenda items for May 27th meeting:

Continue with featured presentations from the various juvenile monitoring projects/activities to better inform team members of what's being done, who's doing it and how they're doing it.

Discussion topics:

Colleen Harvey-Arrison, Jim Earley and Duane Massa expressed uncertainty about using length-at-date criteria developed for the main stem Sacramento River to assign race to juvenile Chinook salmon captured in tributary streams. It was suggested that this topic be discussed at our next meeting.

With respect to rotary-screw trap sampling, several monitoring projects calibrate capture frequencies using simple mark-recapture trials to estimate trap efficiency. For other projects, however, this practice is not used due to physical difficulties and uncertainty about the results/interpretation of these trials.

Duane Massa suggested a future discussion of the appropriateness of estimating abundance of juvenile salmonids using snorkel surveys. He referenced a report critical of this technique. Donna Maniscalco added that she had a copy of the report and would forward it to Phillip Gaines for distribution among the team prior to the next meeting. It was not determined if the proposed discussion would be held at the next meeting or another future meeting.

VI. Suggestions for next meeting - Tim Heyne suggested fewer presentations summarizing juvenile monitoring activities and more time dedicated to discussion topics at the next meeting. There were no objections to Tim's suggestion and, therefore, the next meeting will be divided approximately equally between presentations and discussion topics.

Phillip Gaines asked the team to give some thought to possible objectives or goals the team may wish to pursue. Likely there will be some discussion of alternative goals and objectives at the next meeting.